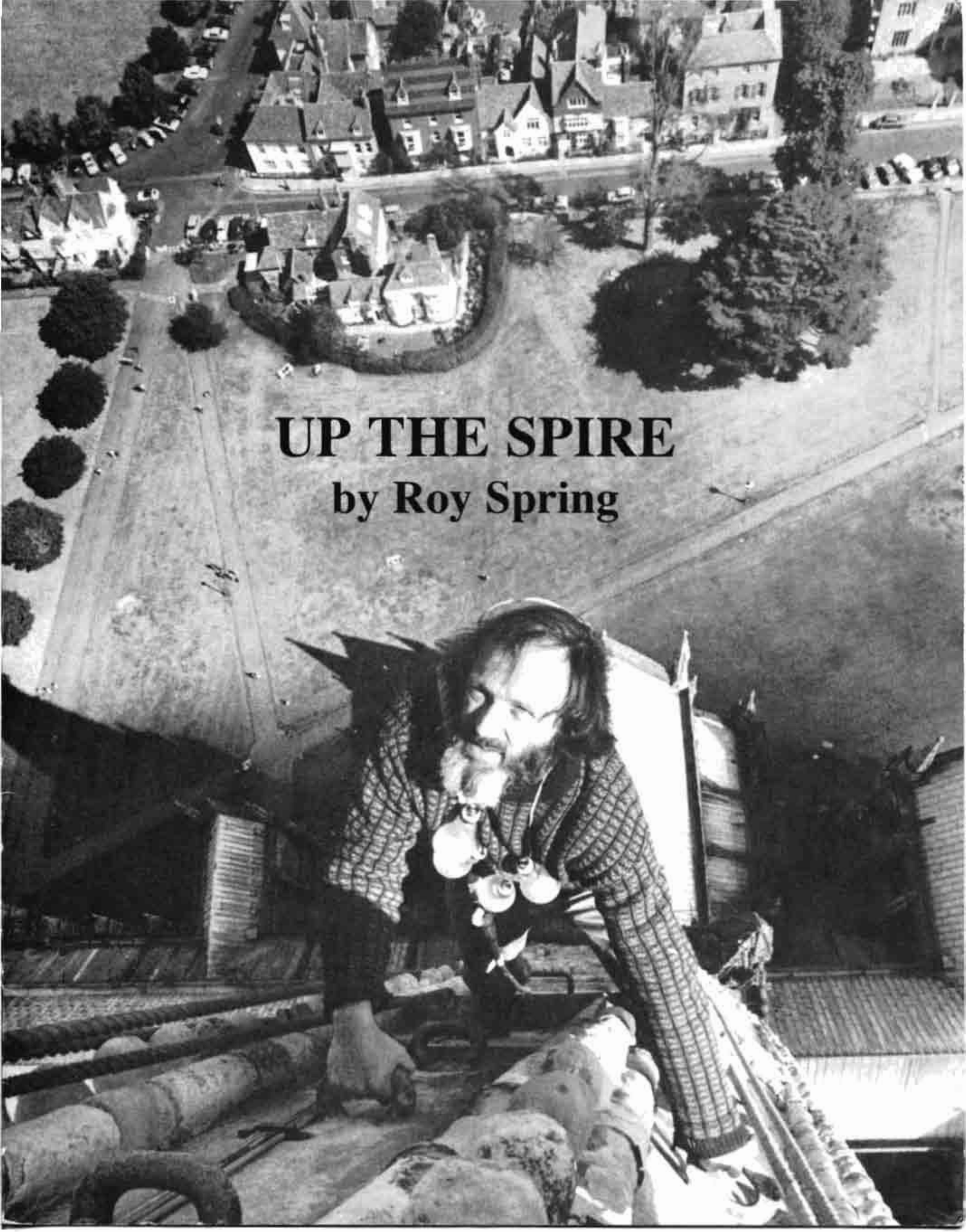
UP THE SPIRE

by Roy Spring



Up the Spire

FOREWORD

To explore the upper reaches of Salisbury Cathedral is an unforgettable experience. You enter the world of the medieval masons and carpenters. You marvel at the audacity, skill and determination that achieved this tower and spire nearly seven hundred years ago. Those men had none of the measuring instruments or mechanical aids of the modern builder. They were craftsmen, inspired by a vision and a faith; men who dared to take risks in a splendid venture.

This booklet is a personal account of these structures written by a man who works within the same tradition, who knows the building more intimately than any other man of our time.

To read what he has written after you have made the journey yourself will recall much that you remember, much that you have forgotten. To read it if you have not made the journey will certainly make you want to do so. The view from the top of the tower amply rewards the physical effort it takes to get yourself there!

April 1982

SYDNEY EVANS
Dean of Salisbury

I have on many occasions climbed to the top of Salisbury's spire and stood upon the capstone. For me it is a place of solitude, despite the people passing beneath and the busy city in the background. It is a place for contemplation and my thoughts often turn to those who were responsible for the original construction, not only of the tower and spire but of the complete new city of Sarum.

Westwards, in the distance, is the spot at Chilmark from whence came the stone for the main walls of the Cathedral as well as the tower and spire. Although the route taken by the carts to bring the sixty thousand odd tons of stone to Salisbury cannot be seen, one can still almost hear the creaking of the wheel bearings when the wind is in the right direction.

Eastwards stretches the Avon up which was transported the Purbeck marble that Alice Brewer had given to the Dean and Chapter. For the first twelve years of the building of the Cathedral the Dean and Chapter were given permission to take as much of the Purbeck stone as they required. Alice Brewer owned many of the quarries and it was her gift towards the building work.

Northwards can be seen Old Sarum and it was here that the present Cathedral was conceived and where the foundations of the Norman Cathedral have been marked out for the visitor. Beyond Old Sarum, but in a direct line with it, can be seen Stonehenge which has stood for many times the period that the Cathedral has been in existence. I sometimes stand and wonder what the original builders felt when they stood at the apex of the structure and contemplated the enormous task they had finished.

The climb to the capstone is one of interest, through parts of the Cathedral where the construction work is not as perfect as that at lower levels. These imperfections somehow make it easier to imagine the men who carried out the work. From the ground the climb is up stairways where the worn stone is a testimony to the many feet that have passed over them. Only the best, and hardest, stone was used for the treads of the stairs and yet some have had to be repaired due to wear where soft veins ran through the stone. Many more show little wear even after more than seven hundred years of use. The route leads through roof spaces and up the stairways of the tower to the point where tower and spire meet. Named "eight doors level" because there are two doors in each of the main faces, it is here that the interior of the spire is approached. From now on the climb gets more difficult, first up ten wooden ladders dating from the early 18thC, which are placed amongst the timber framework that was the original scaffolding. After climbing the ladders between the ever diminishing sides of the spire the weather door is reached. From the weather door to the top the climb is accomplished on the outside. Iron rungs are placed either side of one of the angles of the spire and it is by means of these rungs that the final climb is made.

For me one of the dramatic moments is the opening of the weather door and the view across the city. Beyond, one sees Old Sarum where according to the Register of Dean Davyson (*c*1475), Bishop Poore was directed in a vision by the Virgin Mary as to where the new Cathedral should be built.

Around the walls near the weather door are carved and written the names of some of those who have made the effort to climb this far. Of interest to me is the name of John Springe who in 1580 had made a visit to the Cathedral and was determined to leave a record of his climb. Not only did he reach the weather door, he also visited the chapel of Bishop Richard Beauchamp and carved his name on the effigy of Sir John Cheney which, at that time, was in the now demolished chapel.

Of the climb on the outside the difficult parts are getting out of the weather door on to the rungs and leaning out to reach around the capstone. Coming through the door one is always conscious of the three hundred and sixty foot drop to the grass below and it is at this point that the pulse starts to race. To feel the structure vibrate beneath one's feet, when the wind is strong enough, fills me with admiration for the masons and carpenters who carried out the building work.

At the end of the main building period of the Cathedral (1258), the central crossing area looked somewhat different from today. Standing at the centre, where the main transepts and nave meet, at the spot where the brass plate is now let into the floor, the view upwards would have been into a first stage of tower, surmounted by some form of lantern. From the outside, the top of the original section of tower is indicated by the crenellations just above the level of the main roof. In this original section there were some eight small lancet windows, two at each corner. From their size it is difficult to imagine that they would have allowed in much light. To compensate for this some form of lantern may well have been placed on top of the first section. So, from the floor, the view upward would have extended some one hundred and fifty feet at least and the eyes would have come to rest on the decorated ceiling of the lantern.

Around the inside of the first section of tower is an arcade supported by Purbeck marble piers and shafts. This arcade occupies half the thickness of the main wall and would have to carry half of any weight that was placed on the walls above. The central area of the Cathedral, including this single stage of tower, is supported by four arches resting on four piers. Christopher Wren, in his report of 1668, describes it as a table standing on four legs! The piers in turn had foundations that went only four to five feet into the ground. In common with the rest of the foundations of the Cathedral, they were constructed directly on to a natural bed of gravel at approximately four to five feet below ground level. This then was the situation when the decision was made to extend the tower and add a spire.

It is difficult to know exactly when the tower and spire were built. For many years it has been assumed that an agreement drawn up between Richard of Farley and the Dean and Chapter was for the construction of the tower and spire. The agreement is dated 6th June 1335 and outlines only general conditions and not any specific work. (With such an undertaking as the building of the main central feature of a cathedral, there could be some justification in expecting the exact work to be specified.) Farley was, at the same time, in charge of work at Bath Abbey and the monastery at Reading. The building of the tower and spire was to be an important, and difficult, piece of construction work and the master mason would have been expected to be in attendance full time and not to have other work going on at the same time. Connected with the agreement arranged with Richard of Farley is the granting of a licence by Edward III for the demolishing of the Cathedral at Old Sarum. These two events have been joined by some people to form the basis of the dating of the tower and spire. That stones from Old Sarum were used for the Close wall is beyond any doubt; a walk down Exeter street reveals carvings and a multitude of masons' marks, all of which were originally part of the fabric of Old Sarum. Had the same second-hand stone been used for the tower or spire one would expect to find the same sort of decorated stone and masons' marks. There are neither. It may therefore be safe to assume that all the stone used came directly from the quarry at Chilmark.

If Farley was not the master mason in charge of the work to build the tower and spire, and the materials not those from Old Sarum, what then is the answer? The Capitular Register was begun in 1329 and this makes no mention of any major building work, whereas one would have expected to have found some remarks for something as important as the tower and spire. There are therefore grounds for an assumption that the work was completed before 1329. Support for this can be gained by studying the list of Deans and Bishops in Fasti Ecclesiae Sarisburiensis. Those from 1258 to 1297 mostly took an interest in the fabric and are entered in its calendar of benefactors. Three of these Deans also became Bishops of Salisbury, therefore retaining their interest in the building work. From 1297 until 1379 the Deans are foreign, two being Cardinal Priests, three being relatives of Pope Clement V. Their duties elsewhere would have left them little time for taking more than a passing interest in Salisbury. We are therefore left with a starting date possibly as early as the late 1260s and a finishing date of not later than 1329.

This bringing forward of the building date makes the work on the Cathedral virtually continuous from 1220 to the start of the 14thC. When looked at from a practical point of view, it is logical to keep work going continuously; having set up workshops and gathered together a group of craftsmen, it is much easier to maintain enthusiasm if a long programme of work can be seen ahead. It gives more importance to the training of apprentices and thus the continuation of the original group of craftsmen. With most buildings of the Middle Ages, it was the degree of enthusiasm coupled with a satisfactory flow of money that determined the length of the building period, together with the honesty of the officials in charge of the work. At the start of the building work at Salisbury the pattern of honesty was laid down by Elias de Dereham, who was the first Clerk of the Works; he was described by Stephen Langton as being 'the only honest man in England'. This, I am sure, played a great part in the early days of the building work and created the right conditions for the continuation of the work into the 14thC. The enthusiasm was maintained, the money and materials were all put to the use for which they had been given.

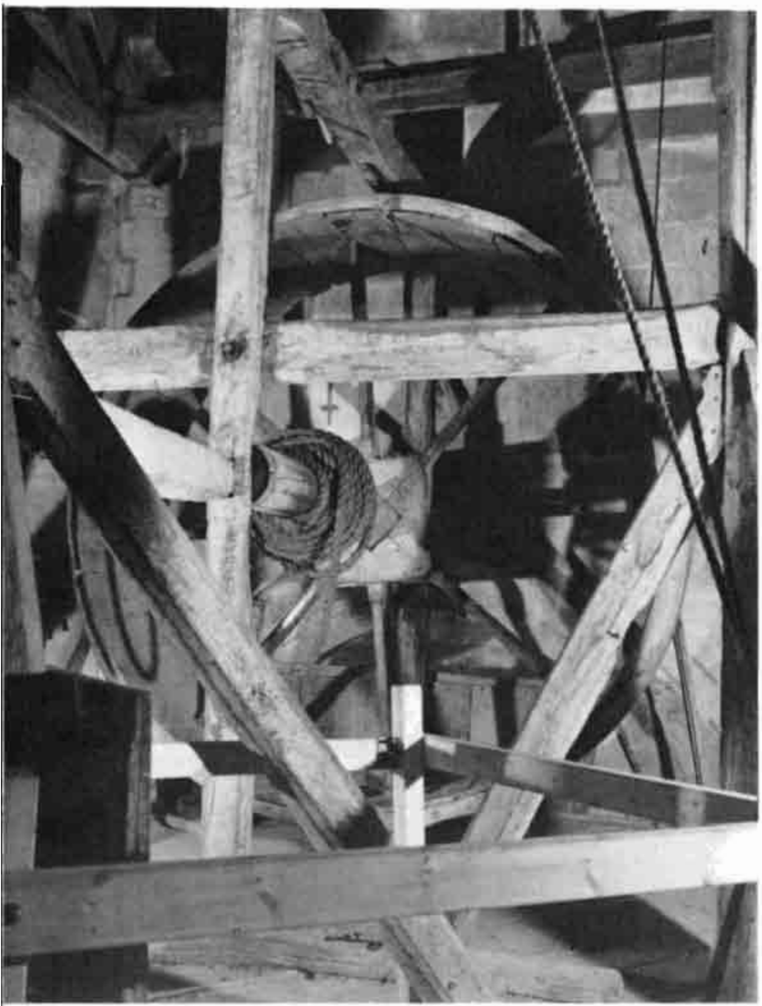
I have mentioned the first section of tower and its fragile nature. It was on top of this they were to build the extension of the tower and spire. Before any building could start there was preliminary work to be done. While the construction was going on, the round of worship and prayer in the Cathedral had to continue. To cut off the noise and dirt, created by the work, from the interior of the building, a wooden floor was placed just above the position of the existing vaulting.

Not much had been known about this temporary seal to the tower until the floor above the crossing vault was renewed in 1972, when remains of tongued and grooved boarding were found on the underside of the floor beams. These are the remains of a boarded ceiling that would have been seen from the floor of the Cathedral and effectively cut off the building work from the normal life of the church below. Once the new floor was in position the roof could be completely removed and a start made on the new masonry work. The floor formed a working platform and it would have been at this point that the first piece of lifting equipment would have been fixed. At the base of the spire there still exists a windlass of some twelve feet in diameter, dating from the late 13thC, which is still in use today.

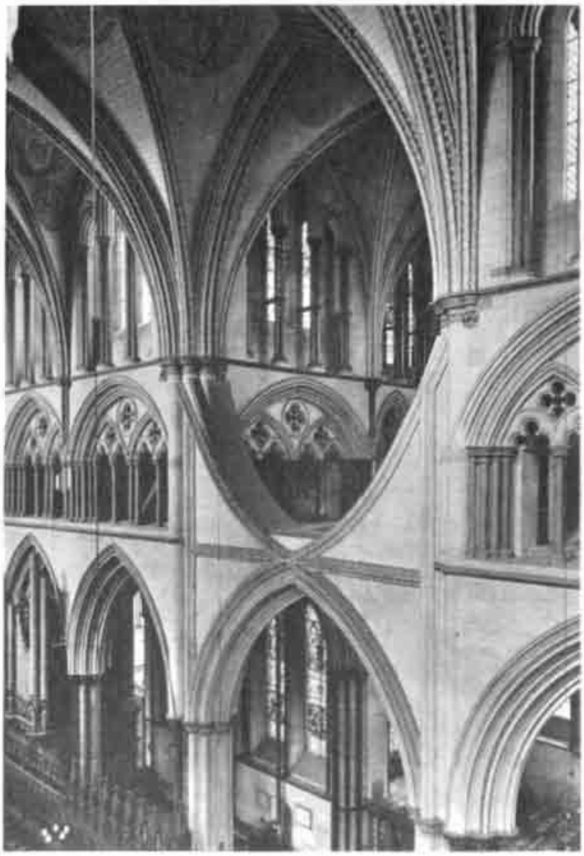
There is evidence that the stonework of the original section of tower was dismantled because of the slight difference one can see in the stones of the interior at the top of the arcade. This may have been to strengthen the top of the wall and provide a reasonable and level base from which to start the new stonework. At this point also the first of the "bandages" of iron, as Wren describes them, was put in.

Of all the iron reinforcing, this particular section is the most elaborate. From its construction, the intention was to prevent any outward movement of the arcade. Connecting rods are taken through the wall and join an outer band to the inner framework. In 1975 part of the outer band was exposed, cleaned and given fresh protection. Most of the iron that was revealed showed little sign of erosion or corrosion. For some years this first section of reinforcing was erroneously called "Wren's ironwork". If one inspects Wren's notebook in the Cathedral archives, it will be found that Wren paid a great tribute to the "original artist" and also to the founder of the ironwork, by calling it the finest in Europe of its age. Wren was so impressed by this ironwork that he reported "that such like bands should be put in from time to time should the need arise". In 1740, some seventy-two years after Wren had made his survey, ironwork was fitted below the wooden floor of the clock chamber using the same method of jointing as in the early 14thC but using Wren's method of providing tension to the bars.

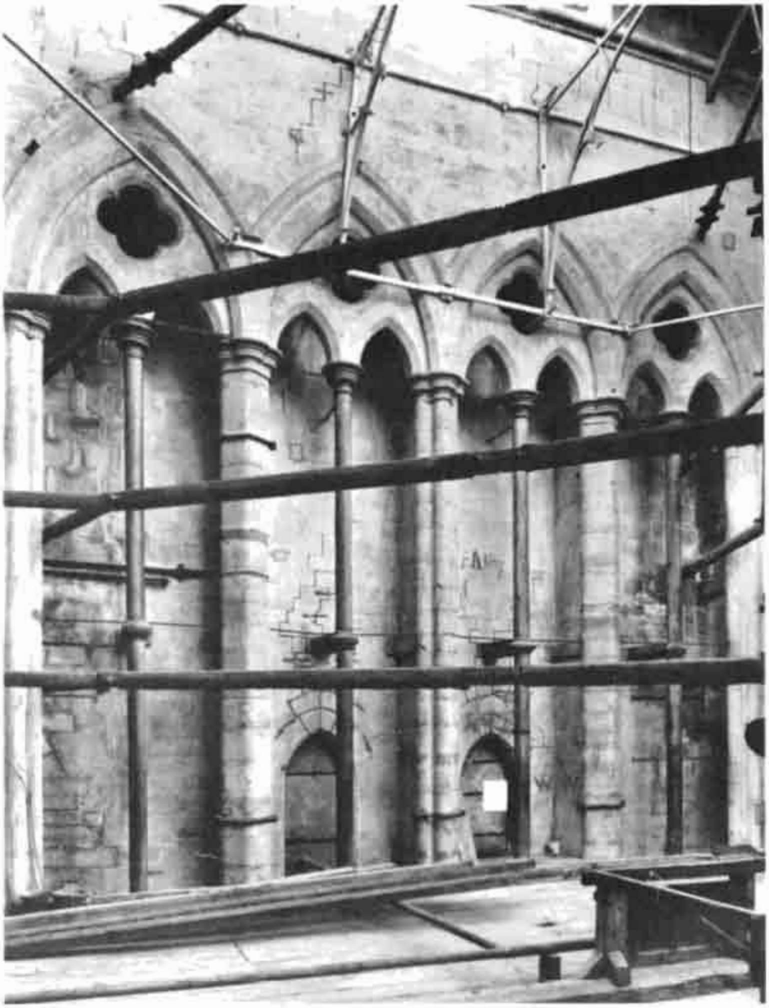
From the top of the original section two stages of tower were built, each face being the same in design. Each face of each section has two pairs of lancets, providing windows,



Medieval windlass still used for hauling materials to the top of the tower.



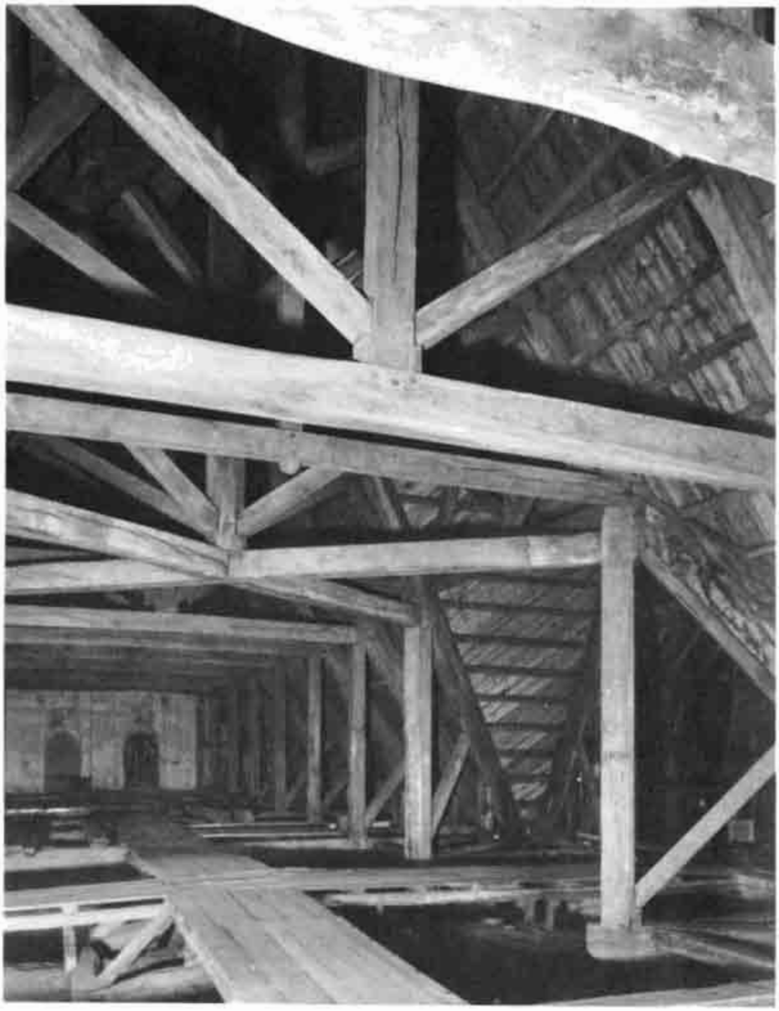
Bracing arches in the choir transept.



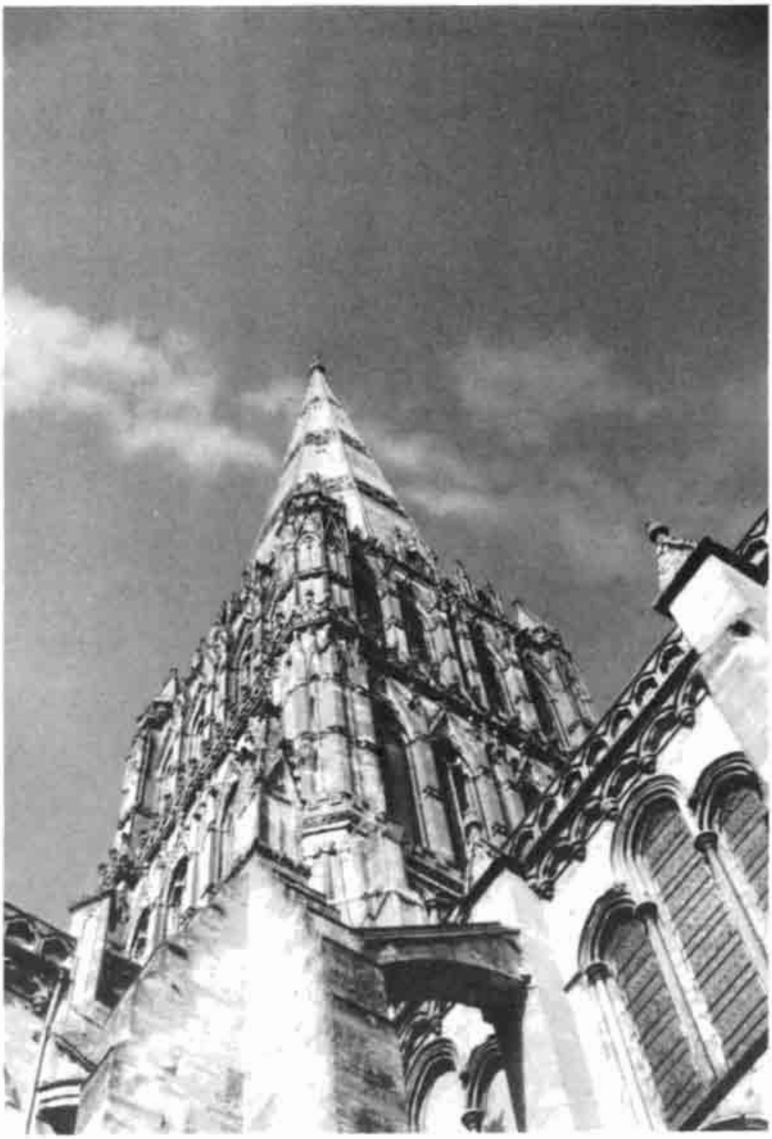
The Tower Chamber. The upper and thinner bars are those of c1300. The lower and thicker ones were installed in 1865.

The crossing vault. (Sir Christ legs").

pher Wren – "Table with four



Main choir roofs where new walkways have had to be fitted.



South-West corner of the Tower.

flanked by two pairs of blank lancets. The main decorations around the lancets are ballflowers, a theme repeated on the spire. But at the junction of the two new stages of tower a lozenge pattern was created, with finials to the upper points, and in the vee made where the lozenges meet, dogs' heads. Why dogs' heads? It is one of those intriguing questions which will probably remain unanswered.

At the top of the tower the lozenge pattern is again repeated in the parapet, again with finials but this time no dogs!

Into each corner of the tower stairways were built, all having an exit at each of the floors. The stairways are lit by small single lancet windows and by small square openings that were probably used as scaffolding holes during the construction work.

It would be logical to imagine the main walls of the tower being of solid masonry. This is not so. They consist of six inch thick veneers of stone with an infill of rubble mixed with lime mortar. The tower masonry is thin in comparison with the stonework of the main Cathedral, which in places is one foot in thickness.

In the upper section of tower there are now five bells. The largest, on which the hours are struck by the clock is one of the original Cathedral bells. It was never intended to have bells hung for ringing in the tower, the structure being such that the swinging of heavy bells might have caused damage. In any case, on the north side of the Cathedral, during the latter stages of the 13thC, a detached campanile had been erected. In height it reached almost as high as the present tower, being some two hundred feet tall. The campanile contained a ring of bells, possibly twelve but certainly ten. When, in 1790, the campanile was removed, the only bell to be saved was fitted in the Cathedral tower, together with the 14thC clock now in the nave. In 1884 the old clock was replaced by the present one and four small bells installed on which the quarters are rung. The original bell was the No. 6 in the peal; it weighs about 28cwt and was recast in 1661.

At the junction of the tower and spire a major structural problem arose for the builders. The tower is square and the spire octagonal. To achieve the fitting of an octagon on to a square, arches have to be built across the corners of the square. These arches then transfer the weight they carry to the main walls of the tower. The arches tend to force out each face of the tower top at its centre. To restrain this movement the top of the tower was reinforced with iron bands. A 2″ × 2″ section iron bar was fixed on the outer face of the tower walls immediately below the parapet. Another was fixed on the inner face and the two connected with short bars of iron with hooked ends that fitted over both inner and outer bars. This ironwork was replaced in 1968-69 by a reinforced concrete ring beam at the tower top and a stainless steel band at the base of the octagon.

Having completed these "squinch" arches and the base of the spire, work proceeded with the building of a shell of stone some 180 feet high. For the first twenty feet the stonework is two feet in thickness but after that the maximum thickness is barely nine inches. For a structure that is 180 feet tall, the thinness of the wall makes it proportionately very much like the shell of an egg.

Two pinnacles were built at each corner of the tower and are both useful and decorative. The smaller forms the cover to the top of a stairway. The larger and more elaborate fills the space between squinch arch and the corner of the tower. It also acts as a buttress against the bottom of the sloping face against which it is built. Inside the base of the spire there are entrance holes into the interior of the main pinnacles. From inside one gets a better idea how large they are—like the tower and spire of a small church.

A building that has sloping walls, its base some two hundred and twenty feet from the ground, presents a problem to the scaffolder. To get over the problem of scaffolding a wooden framework was constructed inside the shell of the spire. This framework provided a means of access and support for each course of masonry. Each stone is joined to its neighbour with an iron cramp around which molten lead was run. This means that the spire is constructed of a series of reinforced stone rings, each ring being completed before proceeding with the next, and all the work being carried out from within the spire shell.

Building work continued in this manner to within some fifty feet of the top. Here construction had to be continued from the outside because of the restricted room inside. Scaffolding was erected on the exterior of the upper fifty feet of the spire. It was fixed to horizontal supports taken through the masonry of the spire shell. When the exterior scaffolding was dismantled the holes in the wall were fitted with stone plugs having iron handles. Set in weak lime mortar they only require a tap with a hammer to loosen them and the holes were used for scaffolding once again. In 1949-51 these same access holes were used to fix the scaffold supports when the upper twenty-five feet of the spire was rebuilt.

The size of the capstone has been greatly exaggerated at various times. It is some five feet six inches in diameter and is not one large piece of stone but made up of four courses, each of which consists of several stones. The individual stones are now joined to each other by means of bronze cramps exactly as they were originally, except that the first cramps were made of iron.

Then as now a Cross was in position at the top and was used as part of the system of bracing the spire shell. The Cross was firmly fixed into the solid section of stonework and the end of the rod in turn connected to the interior wooden framework. At the junction of the rod and central part of the framework a means of tightening the two together was provided. It was an ingenious way of making use of the framework that had been scaffold and formwork to ensure that the shell of the spire was kept under a suitable stress.

Since 1903 there has been a lightning conductor system fixed to the Cathedral. At that time it was the longest in the world. The Cross forms the apex of the system with three earthing tapes made of copper reaching from capstone to the main roofs and on down to the ground. Protection of a different sort was provided for the spire when it was built: a fragment of the Virgin's shroud was placed in a container and lodged in a hole in the capstone. According to Francis Price during the 17thC the container was found within the capstone still preserving what appeared to be a fragment of cloth. By the 18thC the contents were described as possibly being a fragment of cloth. During work in the 19thC only dust was found. In 1949 the container was removed and found to be empty.

During the years since 1300 the spire has been struck by lightning on several occasions. 1431: "the spire of our Lady Church set on fire by lightning." (Chapter Records) 1641: again fire caused by lightning. For helping with putting this fire out, a local woman was paid half a crown. (Chapter Records) On June 21st, 1742 there occurred the last serious damage by lightning. At ten o'clock that night lightning struck the west face of the tower. Early next morning the head verger, on going to open the Cathedral, saw smoke coming out of the tower windows. He raised the alarm and, with the help of the Clerk of the Works, Francis Price, organised a chain of buckets up to the uppermost stage of the tower and managed to gain control, putting the fire out. Price, in his book about the Cathedral, describes the fire and records that when he went to its source it was "roaring like that when the baker is preparing his oven for the bread". As a reminder of the fire, he had one of the main timbers of the bell chamber plated and the charred end left as a warning for all to see. He ends his account by saying: "the noble structure was not yet near its end". The charred end left by Price can still be seen by those who climb to the bell chamber.

Many and varied are the stories connected with the spire and many are the tales of daring about those who have scaled it. In 1655 a person called Old Haley, and described as "the plumber", roasted "a shoulder of mutton and a couple of fowls upon the top of our Lady spire". There could not have been a great deal of room for Old Haley and his cooking equipment but I doubt if there was any lack of draught to make the charcoal fire burn. (City Records).

King Charles II came to Salisbury in 1668, having left London because of the plague and, after watching a football match, ascended to the top of the Cathedral tower. Due to the crush of people, two boys fell from the tower top on to the leads of the main roof and were killed. During this same visit a sailor climbed to the top of the spire for the entertainment of the King and Queen. (City Records).

For many years until the 18thC one of the favourite pastimes of the youths of Salisbury, particularly when a fair was being held, was to build up courage with ale and then bribe the verger to allow them to climb up the tower. The more daring made it right to the top, but all who ascended had at some time to relieve themselves, especially after drinking ale. So great was the nuisance that the Dean and Chapter issued an order putting a stop to the practice under pain of the offender being placed in the Close jail! (Chapter Records).

Soon after the beginning of the construction of the tower, movement must have been discovered, movement that was causing the four main arches to open and thus bend back the tops of the main piers. The thrust of the extra weight was causing the main transepts and the choir to be pushed away from the centre. If one stands by the south organ case, in the aisle, and eyes the second pier with the upright edge of the organ casing one gets some idea how much movement there has been.

In the north and south transepts the eastern piers are some six inches out of upright. This movement had somehow to be checked by means other than the reinforcing that was built into the fabric of the new tower and spire. What was needed was a means of spreading the weight over a larger area and, to this end, flying buttresses were used. Externally, buttresses were raised against each corner of the original section of tower. Internally, buttresses were constructed at clerestory and triforium levels, helping to support the thrust of the main arches. At clerestory level the buttresses cut across one bay and at triforium level two bays. At the south-west angle it was thought necessary to fill in the two clerestory windows on either side of the angle of nave and transept. The stone infill is nine-inch ashlar and provides a stiffening frame to the window openings. Both bays also have ironwork and buttresses. On this particular angle, iron has been used at triforium level—a single bar either side of the angle and fixed horizontally from the main pier across the bay.

Because of the thrust being applied to the arcading in the choir, something had to be done to form a resistance. The choir is of three bays, before coming to the opening of the eastern transepts. To add resistance the openings of the transepts were bridged, using a double arched member with one arch the right way up and the other upside down. They are similar to the bracing arches at Wells but are of a slightly earlier period and not so substantial. In the 15thC, under the direction of Bishop Beauchamp, bracing arches were built north and south of the crossing area. Later, in 1478-80, the vaulting at the crossing was built, replacing the temporary wooden ceiling that had served its purpose for some two hundred years.

Various works have been done over the years since the building of the spire to repair and reinforce it and no doubt even more work will have to be done in the future to keep it in good order. At least we are taking the advice of Christopher Wren and making regular measurements and keeping a watching brief on this magnificent pile!

When I first came to the Cathedral I was told that peregrine falcons nested in the tower and spire.

The Reverend Francis Kilvert records in his diary that while on a visit to Britford, "the vicar has in his house a fine collection of stuffed birds among which are a pair of peregrine falcons which were shot, of all places in the world, on the spire of Salisbury Cathedral. The workmen shot them out of the eight doors at the base of the spire when the steeple was being restored. The Cathedral is generally haunted by peregrines which come from the sea cliffs and set upon the spire whence they can see all the country round and where they think themselves safe."

The only birds of prey that I saw were a pair of kestrels; as for nesting, I found nothing. The following year was different.

A great commotion on the end of the south transept was found to be the result of a pair of kestrels getting rid of a family of jackdaws in one of the many scaffolding holes. The jackdaws were evicted and the kestrels took over the nest built by the previous occupants. In this nest four young were hatched but only three finally flew, one being pushed from the edge of the hole and killed by the fall. The next year the kestrels took up residence in one of the quatrafoil openings in the Chapter House, despite the fact that we were repairing the roof of the Chapter House. For the next three years a precarious position was chosen halfway down the east face of the tower. On one occasion I looked over the edge to see the hen sitting in a puddle of water in which were eggs. Despite such treatment four young were hatched and flew.

A more settled period came about in the next five years when nesting was carried out in the south-east turret of the tower. This period also saw a new mate for the male bird; she, no doubt, chose the new nesting place. On inspection of her ring it was found that she had been ringed at Upton-upon-Severn on the 16 June, 1974. They have since moved to the south-west turret and seem equally at home.

Each year the jackdaws bring noise and bustle to the spire, flying around crying in loud voices, trying to impress mates for the coming season. On accasions a pair of carrion crows have taken up residence and these are a law unto themselves, neither kestrel nor jackdaw deterring them from coming and going as they please.

Each year also visitors arrive at Salisbury from all over the world. Many of them take the opportunity of investigating the upper reaches of the Cathedral and seeing for themselves the interior of the spire. I am sure that the majority of them go away with a greater respect for the original builders. On their journey to the top of the tower they have seen areas of the building that are not as exact and perfect as those seen from the ground. They have passed under the west window where the view of the Cathedral's interior is superb. From this vantage point can be seen the four piers that hold aloft the finest piece of stone engineering in England. They bend beneath six thousand tons of masonry, iron and wood that with great daring was placed in position by numerous unknown craftsmen whose monument it is.

Salisbury Cathedral publications

A Thirteenth-century Portrait Gallery at Salisbury Cathedral by Selby Whittingham.
No History – No Mystery by H. de S. Shortt, F.S.A.
Divisions in Salisbury Cathedral. A word about Screens by H. de S. Shortt, F.S.A.
Salisbury Cathedral – Indications of the Sarum Use by H. de S. Shortt, F.S.A.
The Hungerford and Beauchamp Chantry Chapels by H. de S. Shortt, F.S.A.
The West Front of Salisbury Cathedral by Wing Commander G. L. Cochrane
The Medieval Clock of Salisbury Cathedral by A. J. Duley
The Three Bishops' Tombs moved to Salisbury Cathedral from Old Sarum by H. de S. Shortt, F.S.A.
Constable and Turner at Salisbury by Selby Whittingham
The Use of Sarum by the Very Reverend K. W. Haworth, M.A.
The Stained Glass of Salisbury Cathedral by R. O. Spring
The Chapter House of Salisbury Cathedral by Selby Whittingham
The Masons' Marks of Salisbury Cathedral by R. O. C. Spring

Published by The Dean & Chapter.
Printed in Great Britain by The Tisbury Printing Works Limited.